**BIOLOGY ACTIVITY**

**Gene Mutations and Proteins Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

***Objective*:** To demonstrate how gene mutations affect the production of proteins.

***Procedure*:**

**1.** Use the following base sequence of one strand of an imaginary DNA molecule:

AATTGAACACATGCGCCC.

**2.** Write the base sequence for an mRNA strand that would be transcribed from the given DNA sequence. Place your results in the table below.

**3.** Use Table 11.2 to determine the sequence of amino acids in the resulting protein fragment. Place your results in the table below.

**4.** If the fourth base in the original DNA strand were changed from G to C, how would this affect the resulting protein fragment? Write the new protein fragment in the table below.

**5.** If G were added to the original DNA strand after the third base, what would the resulting mRNA look like? How would this addition affect the protein? Show your results in the table below.

***Data:***

|  |  |
| --- | --- |
| **mRNA from**  **Step 2** |  |
| **Protein Sequence from Step 3** |  |
| **Protein Sequence from Step 4** |  |
| **MRNA from Step 5** |  |
| **Protein Sequence from Step 5** |  |

***Conclusions:***

1. Which change in DNA was a point mutation? Which was a frameshift mutation?

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2. In what way did the point mutation affect the protein?

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3. How did the frameshift mutation affect the protein?

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